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1994 Feature Article - Labour Force Projections to 2011

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INTRODUCTION

The ABS recently published a set of labour force projections in Labour Force Projections, Australia 1995-2011 (cat. no. 6260.0). The first step in producing a new set of projections was to project labour force participation rates by age and sex. These rate projections were discussed in the August 1994 AEI feature article "Labour Force Participation Rate Projections to 2011". The second step in producing labour force projections was to apply the participation rate projections to population projections. The second step, the production of labour force projections, is the subject of this article.

The article commences with a discussion of the population projections. The size of the projected and historical labour force is examined with particular attention to the varying projected growth of the male and female labour force. The labour force is then disaggregated by sex and ten year age groups to examine the changing relative sizes of age groups. Indices are constructed to dissect contributions to labour force growth, first into the contribution of sixteen age-sex age groups and second, into the contributions of population and participation rates. The article concludes with a look at the separate effects of population and participation rate projections upon aggregate participation.

THE POPULATION PROJECTIONS

To produce labour force projections, participation rate projections are applied to two sets of population projections labelled Series A and Series D. Series A and D represent alternative high and low population growth scenarios. For a full discussion of these and other population projections please refer to Projections of the Populations of Australia, States and Territories 1993 to 2041 (cat. no. 3222.0).

When comparing the latest labour force projections with the 1991 set of projections it is important to recognise the recent change to Series A and D population projections. In 1991, Series A assumed a continuation of the existing high levels of overseas migration with Series D presenting a lower migration scenario. However, in the 1994 projections Series A reflects a continuation of the present low levels of net overseas migration, with Series D presenting higher migration.

The differences between series A and D arise primarily from different assumptions about future net immigration. The discussion of labour force projections in this article is based primarily on the application of participation rate projections to series A.

LABOUR FORCE ESTIMATES AND PROJECTIONS

	Levels (numbers in thousands)			Percentage change		Average Annual increase		Distribution (per cent)		
	1979	1993	2011	1979-1993	1993-2011	1979-1993	1993-2011	1979	1993	2011
Males	4,146.5	4,994.6	5,761.2 (A)	20.4	15.3 (A)	1.3	0.8 (A)	64	58	54
			5,902.7 (D)		18.2 (D)		0.9 (D)			
Females	2,372.6	3,624.2	4,870.7 (A)	52.8	34.4 (A)	3.1	1.7 (A)	36	42	46
			5,005.0 (D)		38.1 (D)		1.8 (D)			
Persons	6,519.0	8,618.8	10,631.9 (A)	32.2	23.4 (A)	2.2	1.2 (A)	100	100	100
			10,907.7 (D)		26.6 (D)		1.3 (D)			

(A) denotes labour force projections constructed by applying participation rate projections to series A population projections.

(D) denotes labour force projections constructed by applying participation rate projections to series D population projections.

THE SIZE OF THE LABOUR FORCE

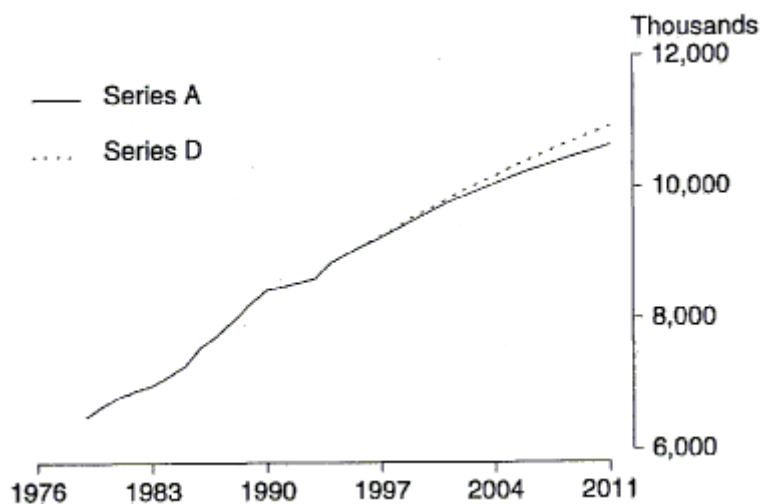
The Labour Force 1979-1993

- The labour force rose 2.1 million to 8.6 million persons, an average annual increase of 2.2 per cent.
- The labour force growth rate slowed from 2.7 per cent in (1979-80) to 0.7 per cent in (1992-93). (Footnote 1)
- The male labour force rose 0.8 million to 5 million, an average annual increase of 1.3 per cent.
- The female labour force rose 1.3 million to 3.6 million, an average annual increase of 3.1 per cent.

The Projected Labour Force 1993-2011

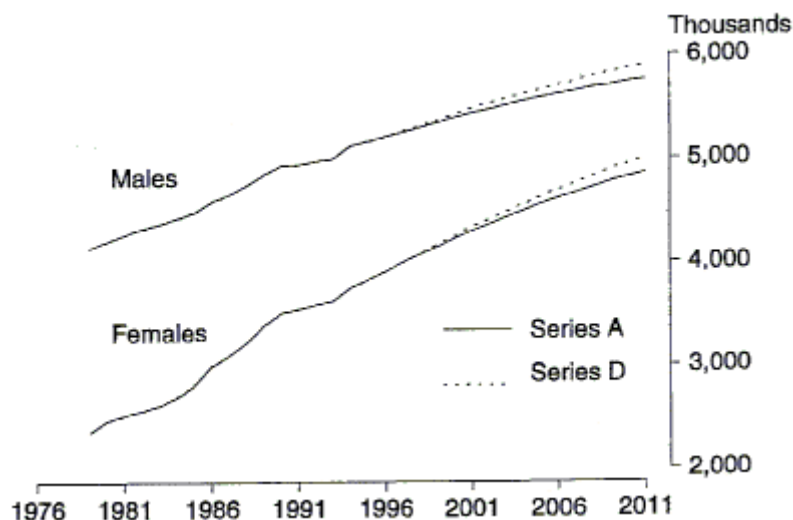
- Applying projected participation rates to Series A population projections, the labour force is projected to rise 2 million to 10.6 million, an average annual increase of 1.2 per cent. (Footnote 2)
- Applying projected participation rates to Series D population projections, the labour force is projected to rise 2.3 million to 10.9 million, an average annual increase of 1.3 per cent.
- The annual growth rate for labour force projections (Series A) is projected to slow gradually from 1.3 per cent in 1995-96 to 0.6 per cent in 2010-11.

CHART 1: LABOUR FORCE ESTIMATES & PROJECTIONS, PERSONS



- The annual growth rate for labour force projections (Series D) is projected to slow from 1.4 per cent in 1995-96 to 0.8 per cent in 2010-11.
- For labour force projections (Series A), the male labour force is projected to rise 0.8 million to 5.8 million, an average annual increase of 0.8 per cent.
- For labour force projections (Series D), the male labour force is projected to rise 0.9 million to 5.9 million, an average annual increase of 0.9 per cent, noticeably less than the projected average annual increase of the female labour force, (see Chart 2).

CHART 2: MALE & FEMALE LABOUR FORCE ESTIMATES & PROJECTIONS



- The female labour force (Series A), is projected to rise 1.2 million to 4.9 million, an average annual increase of 1.7 per cent
- The female labour force (Series D) is projected to rise 1.4 million to 5 million, an average annual increase of 1.8 per cent, a significantly higher rate of increase than that for males, but less than that observed for females over the last fifteen years.

COMPOSITION OF THE LABOUR FORCE IN 2011

Sex Composition of the Labour Force

- In 1979, females comprised 36.4 per cent of the labour force, and males comprised 63.6 per cent.
- By 1993, the percentage of females in the labour force had risen to 42 per cent, and males had fallen to 58 per cent.
- In 2011, the percentage of females is projected to rise to 46 per cent, and males to fall to 54 per cent.

Changes in the Age Structure of the Labour Force

Older age groups are projected to make up an increasingly larger percentage of the male labour force. The number of males in the labour force aged 15-34 as a percentage of the total male labour force is projected to fall from 46 per cent in 1993 to 39 per cent in 2011. In the male age group 35 and over, there is a projected increase of 29 per cent. (The most dramatic increase in the male labour force occurs in the 45-54 age group which is projected to increase 36.2 per cent over the period 1993 to 2011).

Older age groups are also projected to make up an increasingly larger percentage of the female labour force. The number of females in the labour force aged 15-34 as a percentage of the total female labour force is projected to fall from 50 per cent in 1993 to 41 per cent in 2011. In the female age group 35 and over, there is a projected increase of 58 per cent. (The number of females in the labour force is projected to rise in all age groups except 15-19 year olds where a small fall is projected. The female age groups 35-44 and 45-54 accounted for the largest projected increases, accounting for 25 per cent and 40 per cent respectively of the total female labour force growth in the period 1993 to 2011).

Charts 3 and 4 illustrate the size of the labour force in 1979, 1993 and 2011 for females and males respectively. The labour force in these charts is disaggregated by sex and ten year age groups for ages 15 to 64.

In 1979, the age groups containing the largest proportion of the labour force were:

- for females, the 15-24 age group; and
- for males, the 25-34 age group.

By 1993, the largest age groups were:

- for females, the 35-44 age group; and
- for males, the 25-34 age group.

CHART 3: FEMALE LABOUR FORCE ESTIMATES & PROJECTIONS

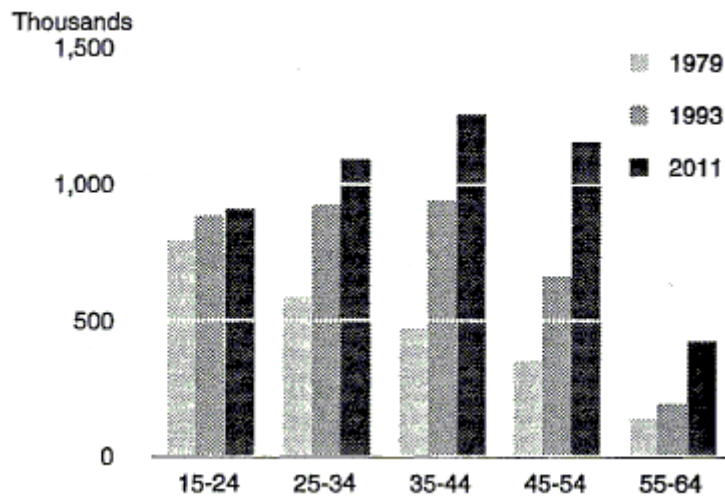
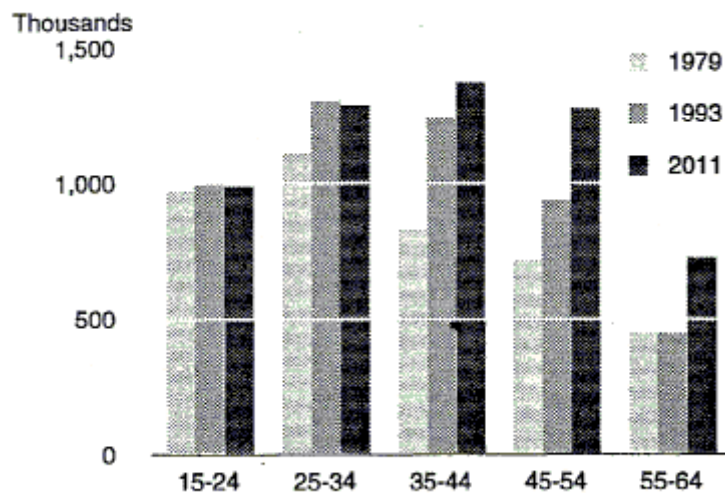


CHART 4: MALE LABOUR FORCE ESTIMATES & PROJECTIONS



According to our projections, in 2011 the largest age groups will be:

- for females, the 35-44 age groups; and
- for males, the 35-44 age group.

Charts 3 and 4 indicate that in 1979 most of the 15-64 labour force was in the younger age groups. By 1993 the dominance of younger age groups had diminished significantly. Older age groups are projected to contain an increasing proportion of the 15-64 labour force, in particular, the 35-44 and 45-54 age groups are projected to become increasingly dominant.

The shapes of the male and female labour force distributions change as the relative levels of age groups changes. The changing shape of the labour force distribution suggests that the average age of the female and male labour force will increase as larger proportions of the labour force are in older age groups.

SOURCES OF COMPOSITIONAL CHANGE

The following analysis identifies the sources of changes in the composition of the labour force during the historical period (1979 to 1993) and the projected period (1993 to 2011). Charts 5-16 present percentage contributions to projected changes in the labour force derived from index

analysis. The vertical scale of the charts can be interpreted as approximate percentage contributions to overall labour force change.

Compositional Change in the Labour Force 1979-1993

Charts 5-10 present the index analysis for the period 1979 to 1993. The analysis shows that the labour force grew by approximately 32 per cent, 27 percentage points of this growth arising from increases in the population and 4 percentage points from increases in participation rates.

Growth in female participation rates contributed positively to labour force growth, the 25-34 and 45-54 age groups being the largest contributors (see Chart 6). Participation in all male age groups fell, thus contributing negatively to labour force growth (see Chart 5).

For both males and females growth in the population of the 35-44 age group was the single biggest contributor to labour force growth. The male and female age groups 25-34 and 45-54 also contributed strongly to labour force growth (see Charts 7 and 8).

Compositional Change in the Labour Force 1993-2011

Charts 11-16 present the index analysis for the period 1993 to 2011 (Footnote 3). The analysis shows that the labour force is projected to grow by approximately 23 per cent between 1993-2011, 17 percentage points arising from increases in population and 6 percentage points from increases in participation rates.

For the projection period the contributions of participation rates to labour force growth are very similar to those in the historical period, (see Charts 5-6 and 11-12). This is to be expected since the rate projections are generally projections of trends derived from past behaviour. Important contributors to projected increases in the labour force are increases in the participation rates of 25-34, 35-44 and 45-54 females (see Chart 12). Changes in male participation rates contribute negatively to the projected overall labour force increase (see Chart 11).

The largest contribution to projected growth comes from increases in the population of the male and female 45-54 age groups, (see Charts 13-14). Growth in the population of younger age groups is projected to be a less important contributor to labour force growth than it was in the historical period. Conversely, population growth in older age groups is projected to be a more important contributor to growth than it was in the historical period. The low (and sometimes negative) contribution to projected labour force growth of the population of younger age groups and the generally large contribution of older age groups, reflects the ageing of the population (as observed in Charts 3 and 4).

The changing contributions of particular age groups' population growth to labour force growth is to be expected. Essentially the analysis is reflecting the large increases in population that occurred in the late 1940s through to the mid 1960s and those that occurred in the early 1970s. As these relatively large population groups move through time they have a significant impact upon the composition of the labour force. In the period 1979 to 1993, this demographic effect was evident mainly through the 20-54 age groups; in the period 1993 to 2011, the effect is projected to shift to the 35-64 age groups.

INDEX ANALYSIS: CONTRIBUTIONS TO LABOUR FORCE GROWTH FROM PARTICIPATION AND POPULATION CHANGE BY AGE AND SEX, 1979-1993

CHART 5: MALE PARTICIPATION RATE

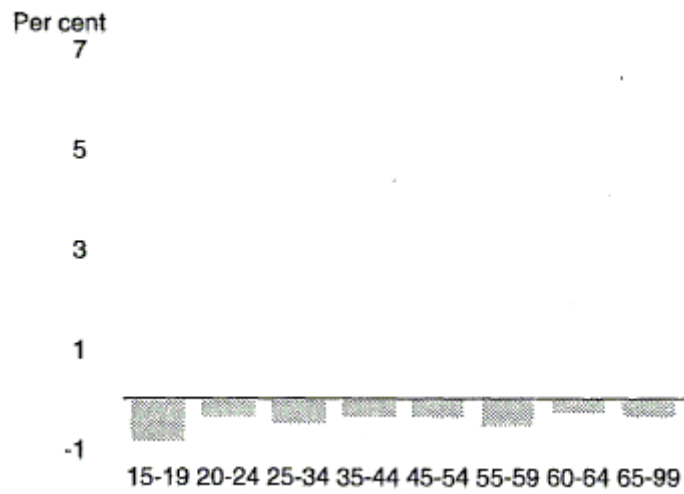


CHART 6: FEMALE PARTICIPATION RATE

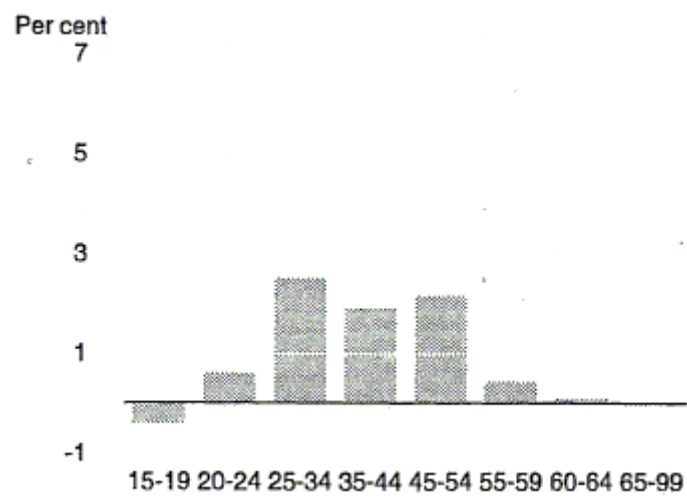


CHART 7: MALE POPULATION

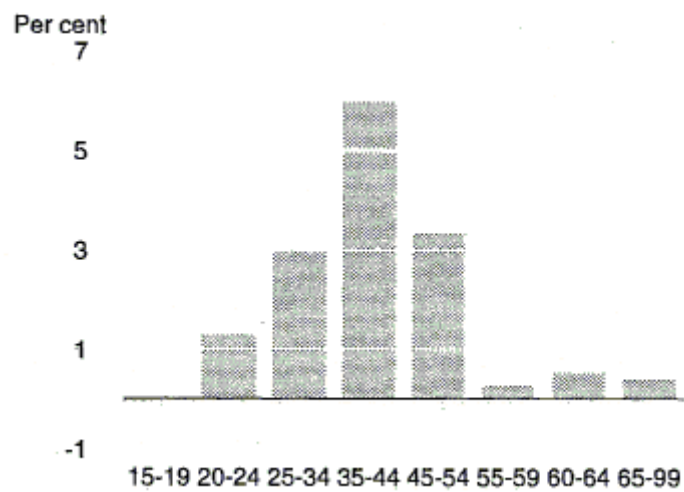


CHART 8: FEMALE POPULATION

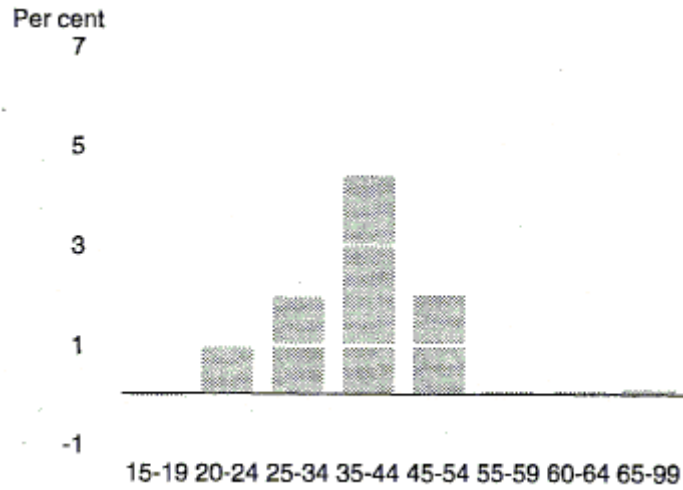


CHART 9: MALE LABOUR FORCE

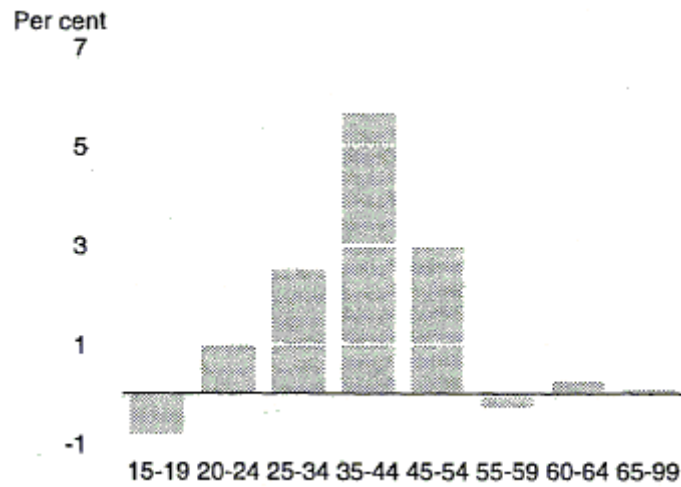
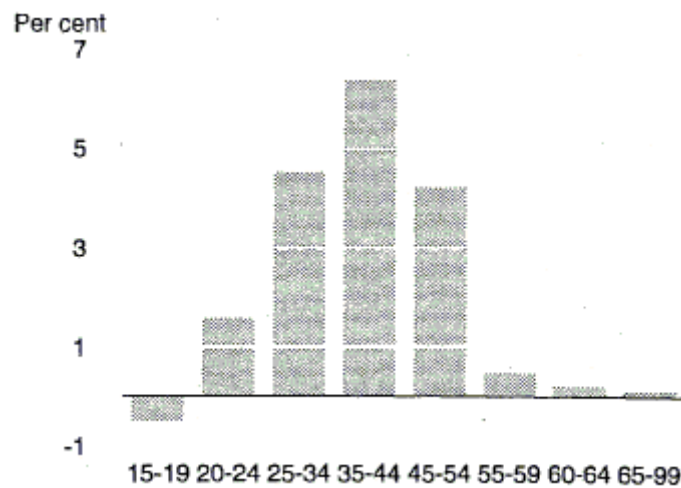


CHART 10: FEMALE LABOUR FORCE



INDEX ANALYSIS: CONTRIBUTIONS TO PROJECTED LABOUR FORCE GROWTH FROM PARTICIPATION AND POPULATION CHANGE BY AGE AND SEX, 1993-2011

CHART 11: MALE PARTICIPATION RATE

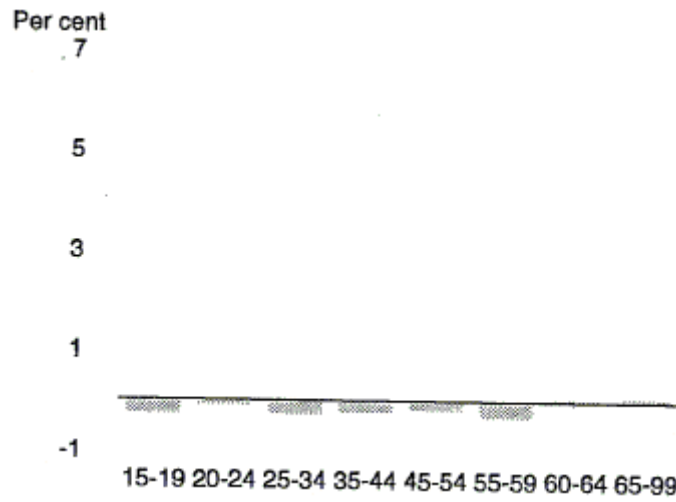


CHART 12: FEMALE PARTICIPATION RATE

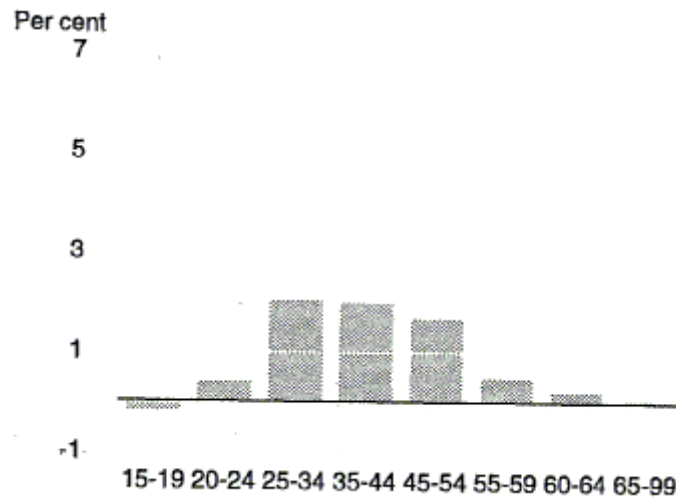


CHART 13: MALE POPULATION

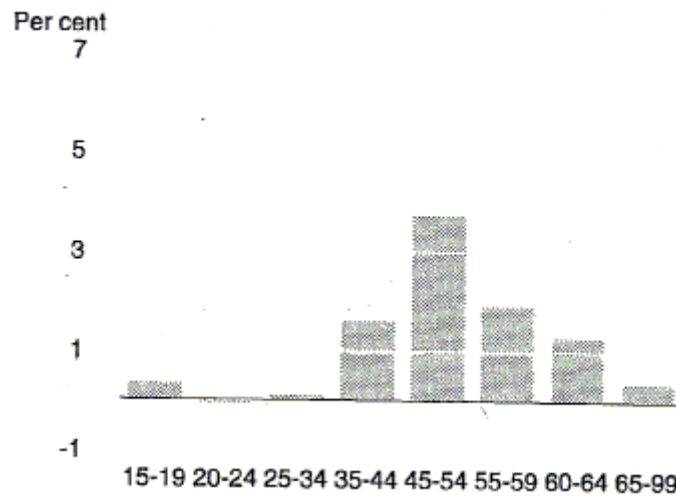


CHART 14: FEMALE POPULATION

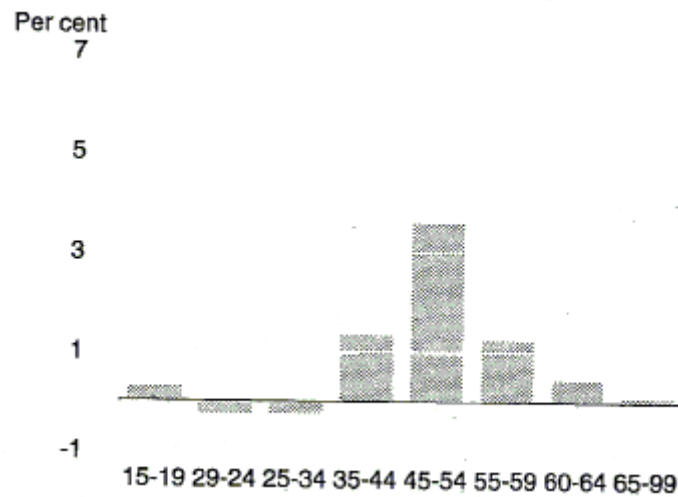


CHART 15: MALE LABOUR FORCE

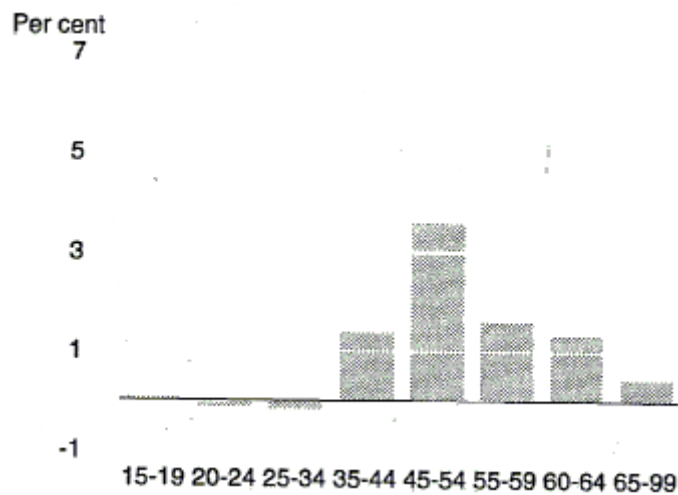
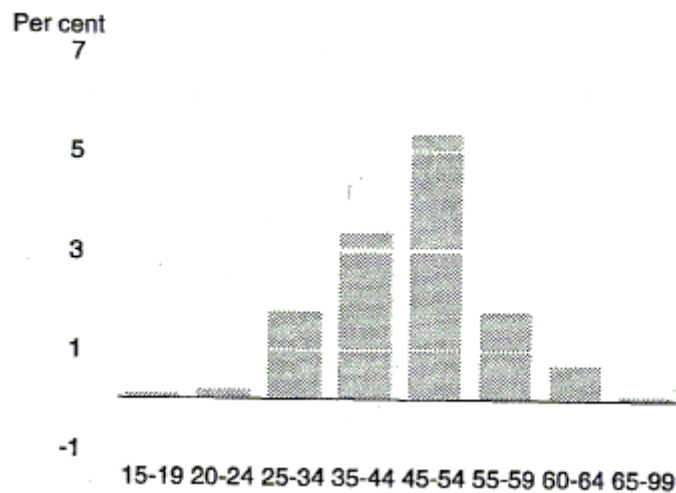


CHART 16: FEMALE LABOUR FORCE



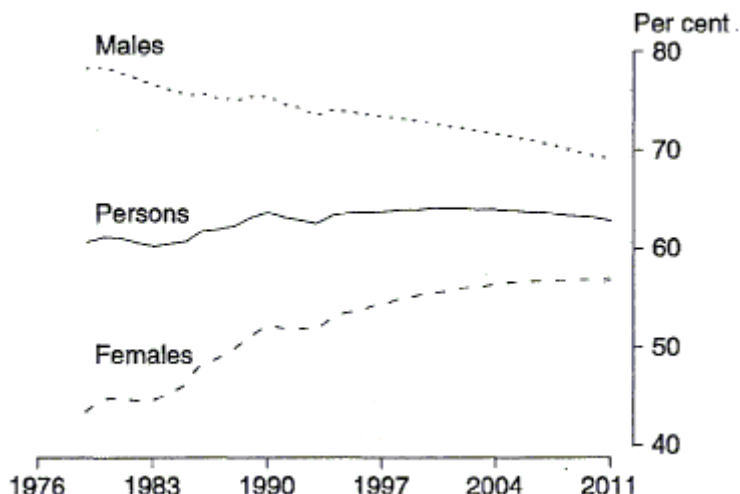
AGGREGATE PARTICIPATION RATES

Aggregate participation rates summarise the **combined** effects of changes in age group participation rates and in the population's specific age groups.

Chart 17 shows that male participation has been declining during the period 1979 to 1993; this

decline is projected to continue until 2011 (the end of the current projection period). Female participation which rose strongly during the period 1979 to 1993, is projected to continue to rise (though at a decelerating rate) until 2010, and then decline to 2011. The major cause of this pattern is projected demographic change; a subsidiary cause is the projected deceleration of female prime age participation rates (which almost flatten out by 2011. For males and females combined, labour force participation rose moderately in the period 1979 to 1993; this rise is projected to continue to 2001 and the rate then falls slowly until 2011.

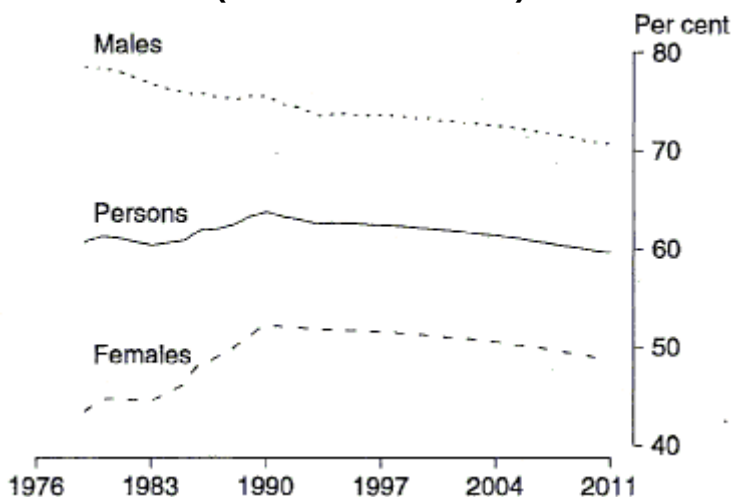
CHART 17: LABOUR FORCE PARTICIPATION RATES, ESTIMATES & PROJECTIONS



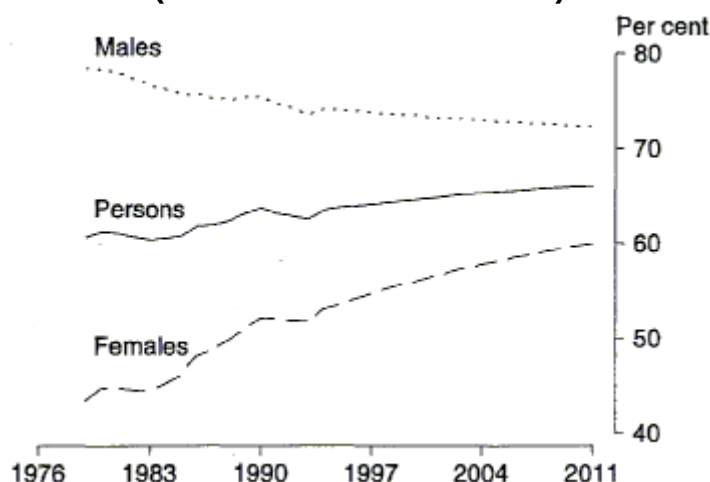
One method of disaggregating the effects of population projections and rate projections upon aggregate rates is to hold one constant while allowing the other to vary.

- When age group participation rates are held constant at their 1993 levels and applied to age group population projections, projected aggregate participation immediately falls (see Chart 18). The demographic effects of an ageing population are causing aggregate rates to fall, despite participation rates being constant for all the separate age groups.
- When the age groups populations are held constant at 1993 levels and applied to projected age group participation rates, the aggregate persons participation rate increases, (see Chart 19), the increase in female rates dominating the decline in male rates.

**CHART 18: LABOUR FORCE PARTICIPATION RATES, ESTIMATES & PROJECTIONS
(RATES CONSTANT)**

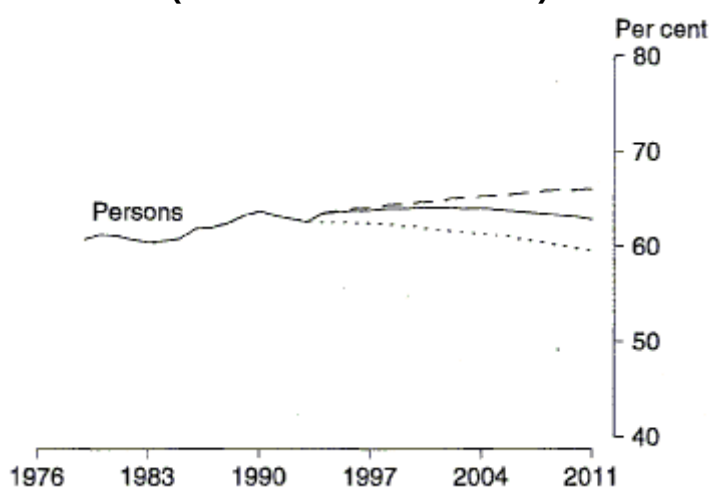


**CHART 19: LABOUR FORCE PARTICIPATION RATES, ESTIMATES & PROJECTIONS
(POPULATION CONSTANT)**



These two charts suggest that the turning point we observe in aggregate female and persons participation rates is a demographic phenomenon, the overall participation rate effect being positive but the demographic effect more strongly negative. Chart 20 shows all the persons participation rates for the three scenarios: age group participation rates constant; age group populations constant; and projections for both participation rates and populations.

**CHART 20: LABOUR FORCE PARTICIPATION RATES, ESTIMATES & PROJECTIONS
(THREE ALTERNATIVES)**



CONCLUSION

The labour force projections produced by the ABS represent just one of many possible labour force scenarios. Projections are dependent on participation rate projections and population projections and there is ample opportunity for both sets of projections not to be realised. However, the labour force projections do provide considerable insights into how the labour force might evolve in the future; for example, a robust conclusion that could be drawn from this article is that the labour force has and will continue to age.

This feature article was contributed by Steven Kennedy, ABS.

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FOOTNOTES

(1) The 1992-93 growth rate of 0.7 per cent partly reflects the influences of the recent recession upon labour force participation; the growth rate will probably increase as the economy continues to move out of recession. However, the longer term general decline is projected to continue.<Back

(2) Comparisons between 1993 and 2011 compare the projected 2011 value and actual 1993 value. The actual data for 1993 is comprised of short term influences as well as the projected underlying trend. Therefore, when comparing 1993 and 2011 data it is important to note that the change in this period will be comprised of a short term movement back to the projected underlying trend as well as change in the projected underlying trend. <Back

(3) Note this is growth over a shorter period, that is, 1979 to 1993 (15 years) as opposed to 1993 to 2011 (18 years).<Back

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